BIOL 1003 General Biology Laboratory I **Lec. 0 Lab. 2 Cr. 1**

Effective Date: Fall 2009-2010

Course Description

Credit for or enrollment in BIOL 1001. Laboratory exercises to explore biological principles, including cell structure and function; cellular metabolism; genetics; and heredity, and to illustrate use of the scientific method.

Course Objectives

Laboratory exercises in BIOL 1003 are designed to enable the student to:

1. Develop an understanding of the scientific method and principles of experimental design.
2. Use the microscope.
3. Know the structure of prokaryotic and eukaryotic cells.
4. Demonstrate principles of basic cellular functions including membrane transport and cellular metabolism.
5. Understand the cell cycle.
6. Introduce basic concepts of heredity and gene expression.

Procedures to Evaluate these Objectives

1. Observation of student performance in the laboratory.
2. Laboratory examinations, lab reports, or projects will be used to assess understanding of the principles covered and of the scientific method.

Use of Results of Evaluation to Improve the Course

1. Students who are having problems with the use of the microscope will be given one-on-one assistance until this skill is mastered.
2. Results of laboratory examinations, reports and projects will be used to make modifications in teaching methodology, or content if necessary.
3. Results of laboratory examinations will be used to make modifications in examination format, if necessary.

Detailed Topical Outline

1. Introduction
    a. Lab safety
    b. Ethics

c. Microscope

2. Scientific Method
3. Cell Structure
   a. Plant cell/microscopy and prepared slides
   b. Animal cell/microscopy and prepared slides
   c. Prokaryotic cell/microscopy and prepared slides
4. Transport
   a. Osmosis
   b. Diffusion
5. Enzyme functions
6. Cellular respiration
7. Mitosis
8. Meiosis and gametogenesis
9. Photosynthesis
   a. Pigment separation and chromatography
   b. Leaf structure
10. Genetics
11. Nomenclature and hierarchies